Dear Editor:

We would like to congratulate Dr. López-Caballero C, Contreras I, Muñoz-Negrete FJ, Rebolleda G, Cabrejas L and Marcelo P, for their article «Rebound tonometry in clinical practice. Comparison with applanation tonometry» (1).

In this study they compared the pressure obtained with Goldmann’s tonometer to Icare®’s tonometer in a population of 68 patients and they concluded that this tonometer can be applied in clinical practice taking into account it overestimates Intraocular Pressure (IOP) compared to the applanation tonometer.

We conducted a study at our Unit, which was presented at the 2nd Congress of the Spanish Glaucoma Association (2007), where we compared three types of tonometry: Applanation-Goldmann, Rebound-Icare® and Air, to evaluate their reproducibility and precision in 57 patients (114 eyes). The intertonometer correlation found in our study (Icare® vs. Goldmann 0.867, Icare® vs. Air 0.838, Air vs. Goldmann 0.864), as well as interobserver and intraobserver correlation (0.82, 0.73), are similar to that proven in the study and other literature (1-3).

We have verified in our own series that the actual calculation formula for IOP proposed by Lopez-Caballero C and cols. is extraordinarily useful (actual IOP = 2.48 + 0.69 Icare® IOP) and should be added to the tonometer’s instruction manual. Thus, the conclusions of our study reinforce the findings of the authors of the paper who came to similar conclusions: in nearly 85% of their cases the Icare® tonometer overestimates Goldmann’s tonometry, reaching almost 90% in our study. However, it should be clarified that this overestimate in our experience, is much greater in the highest IOPs. Thus, if we divide the population studied into tiers by IOP we could state that in the range up to 20 mmHg it overestimates IOP in 3 mmHg, between 20 and 26 mmHg it overestimates about 6 mmHg, but in the range above 26 mmHg it overestimates 10 mmHg, with a few occasional cases of glaucoma patients where IOP was overestimated up to 15 mmHg (fig. 1). The same is true of the intraobserver variability —several measurements of the same patient taken by the same physician— and interobserver variability —where incidentally we should mention that some doctors have great difficulties with the learning curve—. Thus, at IOP levels of up to 20 mmHg these mean variabilities are not greater than 2-3 mmHg, but in patients with IOL equal to or greater than 26 mmHg, variability generally reaches 5-6 mmHg.

In this regard, Icare® presents a different behavior than the pneumatonometer: while the former overestimates IOP in high ocular pressures, the second underestimate it. In our experience, we conclude that it is still far more useful, practical and reproducible at the practice to use the Air tonometer for screening rather than the Icare® one, as this is not very useful to follow-up glaucomatous patients either.

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Reply

Dear Editor:

We welcome the comments and contributions of Dr. Díaz Llopis. We feel very flattered by the fact that he considers our formula should be included in the instruction manual, but we believe broader studies need to be conducted to compare it to the formulas proposed by other authors.

We would like to take this opportunity to add a few points recently published about this new tonometer. We agree with Dr. Díaz Llopis that the rebound tonometer should not be used for glaucoma follow-up, given that its tendency to overestimate intraocular pressure (IOP) is greater in higher pressure values, as has also been recently confirmed by Chui et al (1).

In our article we suggested two potential uses that have been recently confirmed with clinical trials (2). One of them is use in children. In this sense, Sahin and col. have proven high reproducibility, with a high intra and interobserver correlation in pediatric patients (3). On the other hand, as it does not require anesthetic eye drops, measurement is very convenient, which makes it a very interesting option for children in whom contact tonometry may be difficult and who are frequently frightened by the jet of air of pneumotonometry.

Another possible use of interest is in pathological corneas, in which at times it is not possible to obtain reliable measurements with Goldmann’s tonometer, given that the semicircles appear distorted. The rebound tonometer only contacts an area of 1 mm of the corneal surface, which allows obtaining reliable IOP measurements in pathological corneas, as recently demonstrated by Dr. Moreno-Montañés and col., with the additional advantage of not requiring anesthetic eye drops and using a disposable end, thus reducing the risk of infection (4).

In addition to these advantages, is the fact that it is portable, given its small size and low weight, which makes it a potentially useful method for screening campaigns in developing countries.

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